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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 16

Application Number: 09/707,885
Filing Date: November 08, 2000
Appellant(s): CHIAVAROTTI ET AL.

Michael R. Davis
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/30/2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) ***Related Appeals and Interferences***

A statement identifying the related appeals and interferences that will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) ***Status of Claims***

The statement of the status of the claims contained in the brief is correct.

(4) ***Status of Amendments After Final***

No amendment after final has been filed.

(5) ***Summary of Invention***

The summary of invention contained in the brief is correct.

(6) ***Issues***

The appellant's statement of the issues in the brief is correct.

(7) ***Grouping of Claims***

Appellant's brief includes a statement that claims 15 and 18-20 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) ***Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) ***Prior Art of Record***

5,723,232	YAMADA	3/1998

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 15 and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al. (US 5,723,232.)

The instant claims are to an impermeable or substantially impermeable electrode suitable for use in a battery comprising a substrate with an impermeable or substantially impermeable conductive layer of graphite on the substrate. A battery comprising as a negative electrode a substrate with an impermeable or substantially impermeable conductive layer of graphite on the substrate is separately claimed.

Yamada et al. (US 5,723,232) teaches a carbon electrode for a non-aqueous secondary battery wherein an electrode comprises a substrate with a layer of graphite added to the substrate. For example, the material is prepared by forming a slurry including graphite and a polymeric binder (col. 6, lines 20-30). The substrate may be dipped or coated with the graphite solution (col. 6, lines 20-40.) The slurry is added to both sides of a nickel substrate and the material is dried at elevated temperatures. The electrode is then heat-treated at various temperatures (as noted in column 7, lines 1-15.) Calcinating temperatures of 300 °C and 1000 °C are noted in example 1. The comparative electrode was dried at 60 °C and was then further heat-treated at 240 °C and 200 °C, (see examples 1-2, 8 and comparative example 2.) An equivalent method is provided in the instant application to prepare an impermeable or substantially impermeable conductive layer of graphite on the substrate. As the methods are equivalent, the graphite layer of the prior art reference must also inherently be impermeable or substantially impermeable.

With regard to claim 19, figure 6 shows a battery wherein the case is provided as positive and negative connectors (also see claims 7-8.) The electrodes include graphite as previously discussed. The electrodes and corresponding case elements are in contact to transfer electrical charge.

With regard to claim 20, the battery may be lithium as shown throughout the reference, and specifically in claim 8. Example 16 shows the negative electrode to be opposite positive electrodes and layered with separators in between. Figure 6 shows a battery wherein the case is provided as positive and negative connectors. The electrodes and corresponding case elements are in contact to transfer electrical charge. As each limitation of the claims is met by the reference, the claims are anticipated.

(11) Response to Argument

The examiner has taken the position that the methods of producing the electrodes are the same or similar as between the instant invention and the prior art reference of Yamada et al. and that the product of the reference must also be impermeable or substantially impermeable. The applicants do not provide evidence to show that the layer of graphite on the substrate of the reference is permeable as compared to the graphite layer applied to the substrate in the instant invention

The applicant's arguments with respect to the parent application are moot as the claimed subject matter is different. Although the claimed process of the parent application was considered patentable, the applicant has not shown that the process of the prior art reference does not form an impermeable or substantially impermeable graphite layer on a substrate.

The applicant presents arguments that the methods of forming the electrodes are different, however, does not provide evidence that the graphite layer of the reference is not impermeable or substantially impermeable graphite layer on a substrate. In fact, the methods are similar in that both the reference and the instant application employ a metal substrate and add a slurry of graphite to the surface of the substrate. The materials are then dried and heated. In the arguments, the applicant shows that the drying is done at 80-150 °C and the heat-treatment is at 200-450 °C in the application. In comparative example 1, the drying is done at 60 °C and the heat-treatment is at 240 °C. In addition, the reference teaches high temperature calcinating of the materials in various examples. The applicant's argue that the prior art graphite electrode is different than the various examples of the instant application as the process for forming the electrode is done by sintering that material. This treatment, as mentioned in the applicant's arguments, will provide an effect which one would expect to produce a more homogeneous and bonded structure. This would lead one of ordinary skill in the art to understand that the graphite layer structure is denser and impermeable. The applicant contrasts this step with the heat treatment step in the instant specification that is provided to "readjust the porous structure." It is noted that the high-temperature heating step of the Yamada reference will readjust the porous structure and produce a denser surface layer, as sintering is well known to form a coherent mass with a higher density that forms a less porous material. Common definitions of sintering have been noted in previous arguments and are attached with this Reply Brief. From this, the heat treatments are equivalent for forming a more dense structure that is impermeable.

Applicants further argue that the electrode of the applied reference, which describes a layer of graphite on a substrate, does not include a layer that is impermeable or substantially

impermeable. The applicants do not provide and evidence to show that the layer of graphite on the substrate of the reference is permeable as compared to the graphite layer applied to the substrate in the instant invention. Instead, the applicant refers to the porous metal substrate material (as compared to the electrode with a graphite layer) that is impregnated and coated with a layer including a graphite material. The reference to a three dimensional structure with a porosity (col. 4, line 52), is to the metal collector as noted in lines 43-44. The metal collector is impregnated and coated with the graphite material throughout the reference and specifically in col. 3, lines 25-50 and col. 6, lines 23-40. From this, it is clear that the porosity is in the substrate and not in the graphite-coating layer.

With regard to the applicant's arguments that the active substance density of the electrode is not sufficient to be impermeable or substantially impermeable, the applicant has presented that graphite generally has a density of 2.25 g/cm. This is simply the value of the density of the material and not the amount of graphite in the unit volume of the electrode. In the reference, the amount of carbon in the unit volume of the electrode is 0.85 g/cm^3, however, the instant application does not provide any comparable density of the material in the unit volume of the electrode. There is no evidence that the active substance density of the electrode does not provide an impermeable or substantially impermeable layer of graphite material. As the process of adding the coating onto the electrode is equivalent, the graphite coating will provide an impermeable or substantially impermeable layer of graphite material.

With regard to the applicant's arguments that the substrates are different and critical to the reference (pages 6-7 of the appeal brief), the instant specification provides no critical features of the substrate that are different than the substrate of the reference. In both the application and

the reference, the substrate may be a metal foil. In column 6, lines 23-39 of the reference, the substrate is coated with a graphite material and, in a different method, a substrate may also be impregnated with a graphite active material. The applicant notes that a porous substrate will be coated in the pores and that the coated pores will be a feature of the product. While this may or may not be true, in either case the electrode will comprise a substrate with an impermeable or substantially impermeable conductive layer of graphite on the substrate. By dipping the substrate in a solution or coating the substrate with a graphite layer, the surface area of the pores will have an impermeable or substantially impermeable conductive layer of graphite on the substrate surface. The instant claims do not prohibit such an electrode.

With regard to the applicant's arguments for patentability of claims 19-20, the position of the applicant is that the reference does not teach that contact is established between the graphite block and the negative case. The applicant's reasoning is that reference does not explicitly describe elements 1-8 of figure 6. The elements of the figure are generally described in column 15 of the reference, however no numerical designation is given. The skilled artesian would recognize the elements in a coin-type battery as described in column 14. The standard coin-type battery includes the casing as the battery terminals and the active materials of the battery must inherently be attached to the battery terminal to form a battery. This is shown in the figure. The common coin battery is well described in the art. An attachment is included which clearly describes the elements of a coin battery from the *Handbook of Batteries* text of D. Linden. From figure 6 of the Yamada reference, it is clear that the active materials are connected to the casing.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Mark Ruthkosky

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September 3, 2003

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